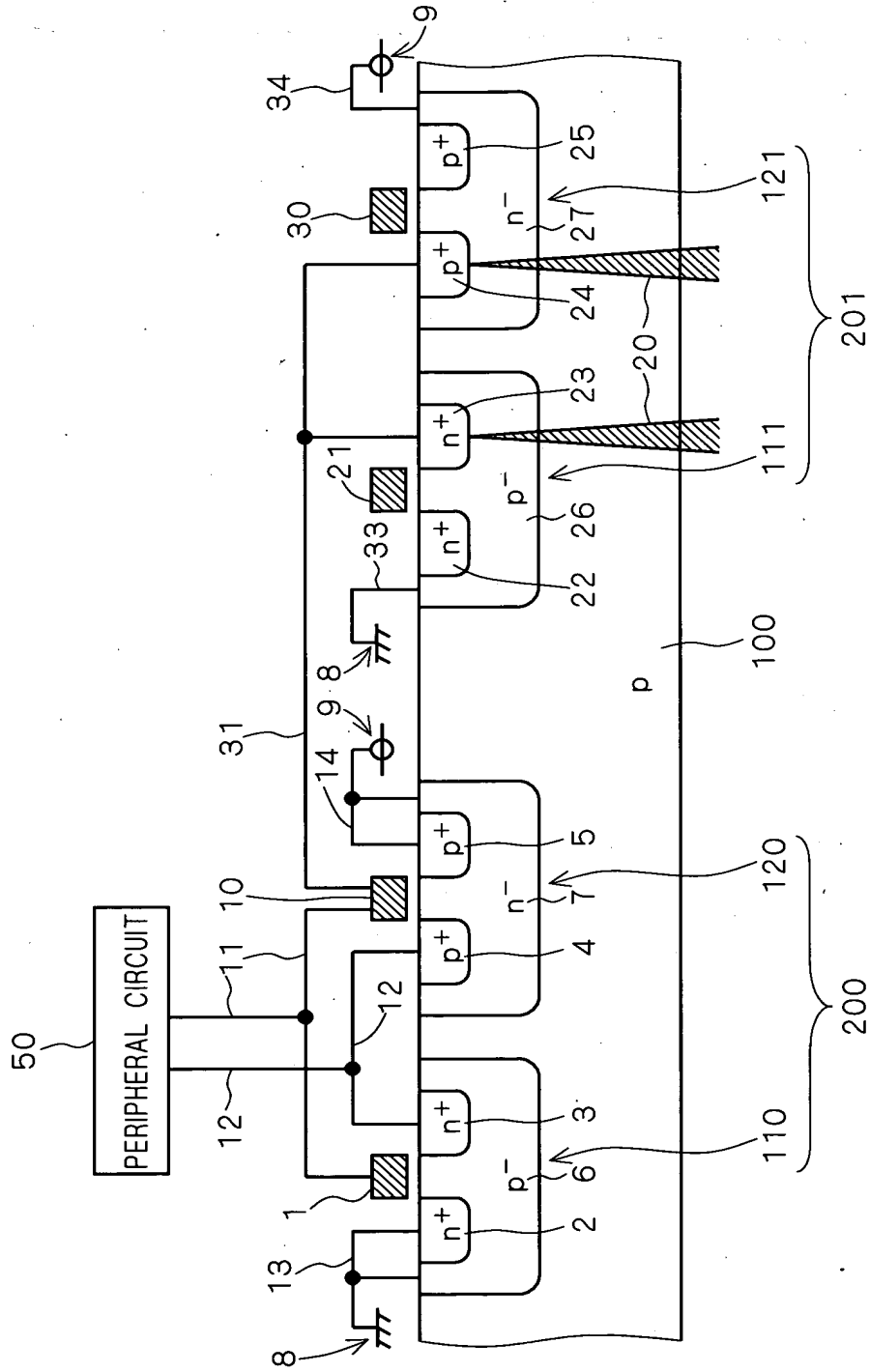


FIG. 1



This diagram shows a cross-sectional view of a semiconductor device. A substrate 100 is divided into a peripheral circuit region 200 and a main circuit region 201. The peripheral circuit region 200 contains a peripheral circuit 50, which includes a series of transistors 1, 3, 5, 7, 9, 11, and 13. These transistors are connected to a common line 12. The main circuit region 201 contains a series of transistors 2, 4, 6, 8, 10, 12, and 14. These transistors are connected to a common line 32. The substrate 100 is doped with p-type material (p) and n-type material (n+ and n-). The peripheral circuit region 200 is separated from the main circuit region 201 by a trench 20. The peripheral circuit region 200 is also separated from the main circuit region 201 by a trench 20. The peripheral circuit region 200 is also separated from the main circuit region 201 by a trench 20.

This diagram shows a cross-sectional view of a semiconductor device. A substrate 100 is divided into a peripheral circuit region 200 and a memory array region 201. In the peripheral circuit region 200, a peripheral circuit 50 is formed on the surface, including a gate stack 12, a source/drain region 13, and a contact 14. The memory array region 201 contains a series of memory cells. Each memory cell consists of a gate stack 21, a source/drain region 22, and a contact 23. The gate stack 21 is formed on a gate dielectric layer 24. The source/drain region 22 is formed in a semiconductor layer 25. The contact 23 is formed in a contact layer 26. The memory array region 201 is further divided into a first memory cell region 110 and a second memory cell region 120. The first memory cell region 110 contains a first memory cell 111, and the second memory cell region 120 contains a second memory cell 121. The first memory cell 111 and the second memory cell 121 are connected to each other and to the peripheral circuit 50.

5



FIG. 5

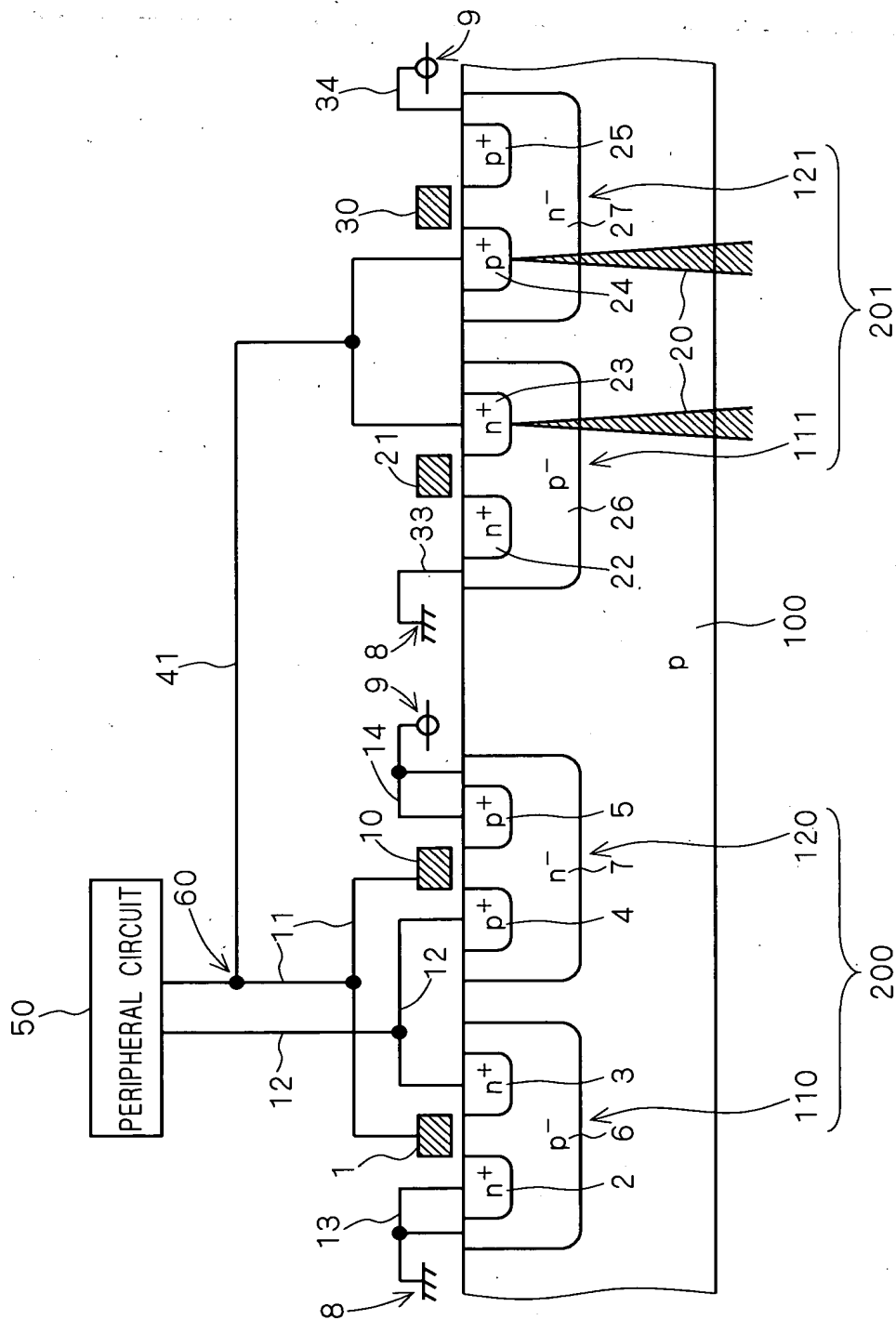
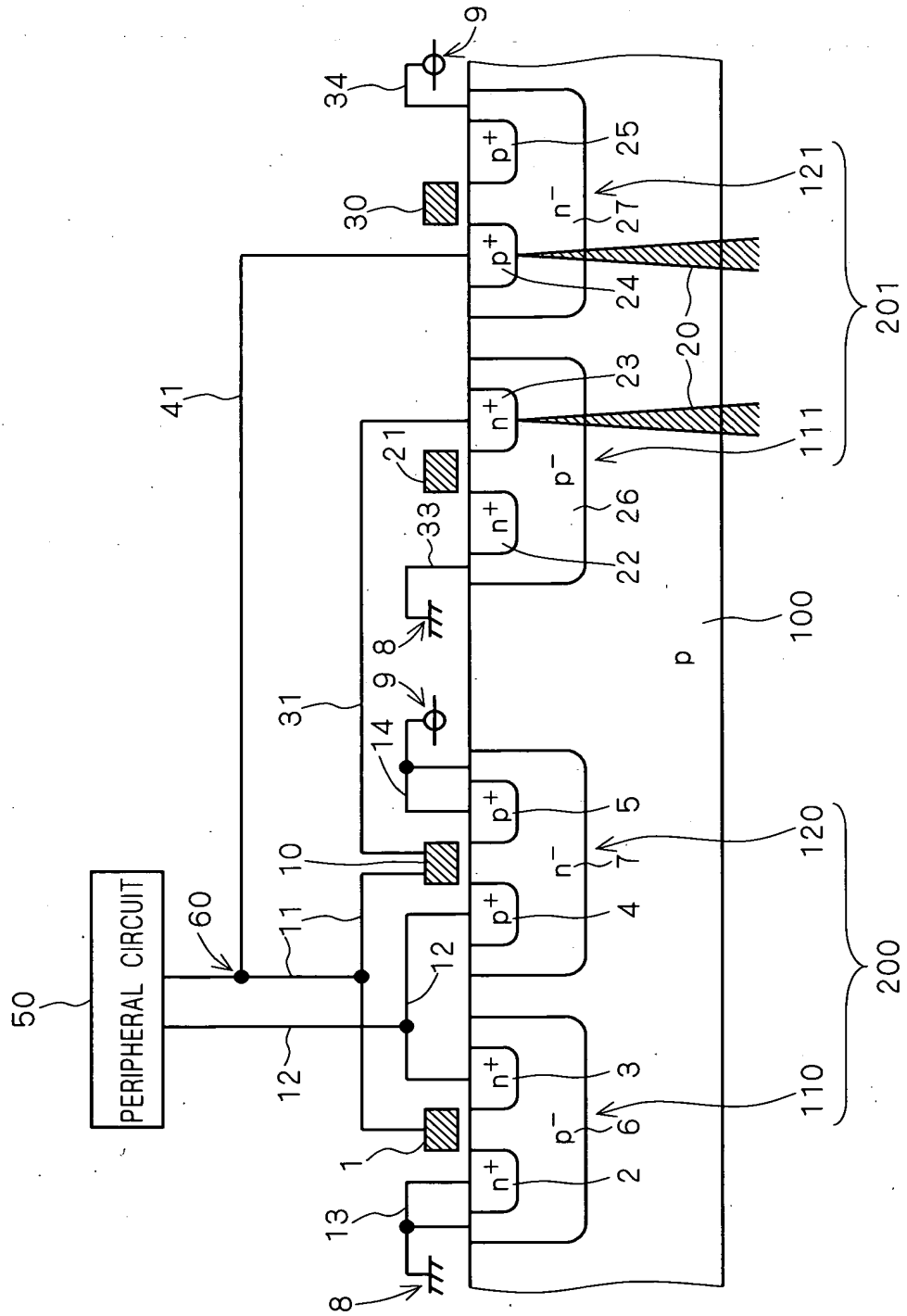


FIG. 6



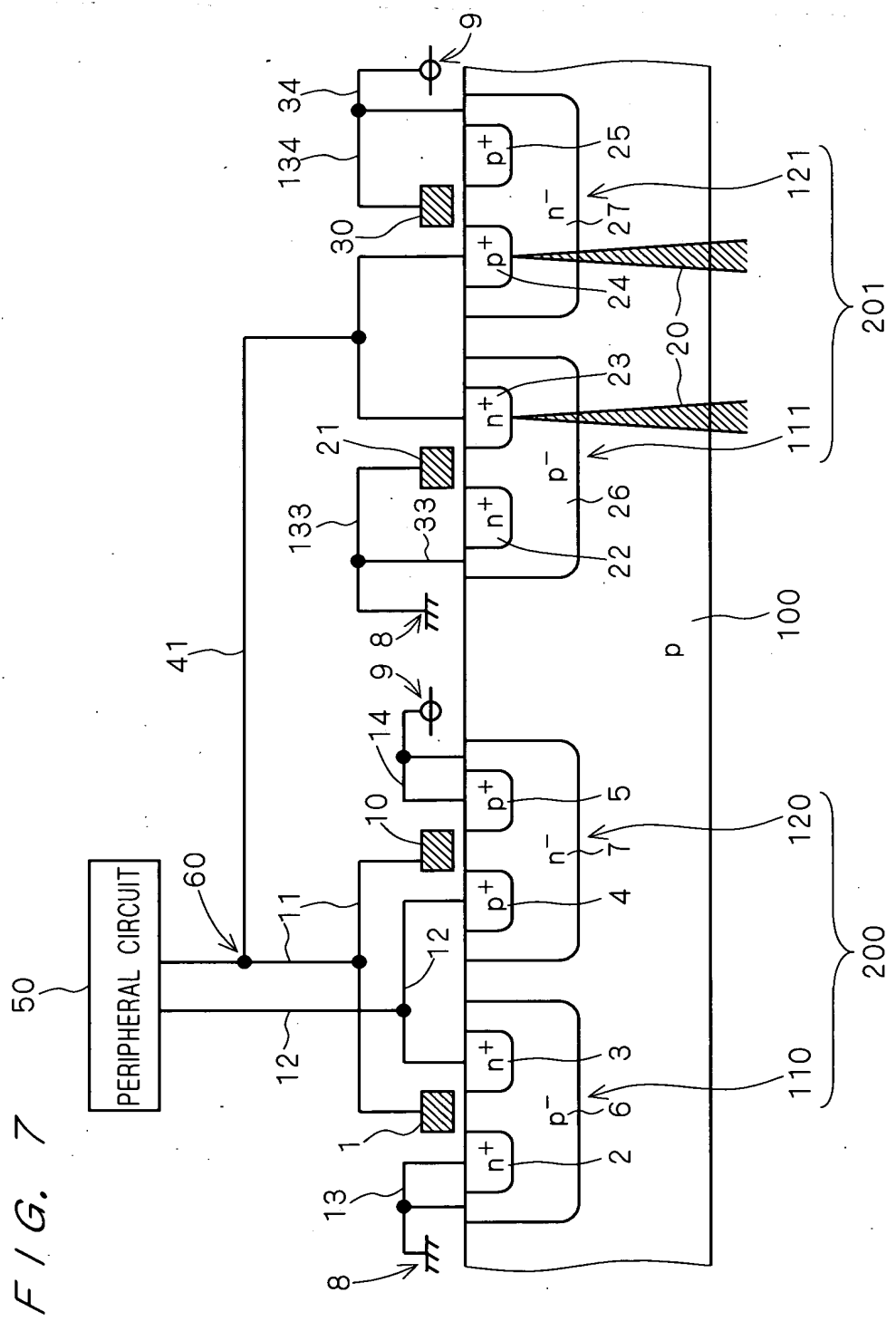
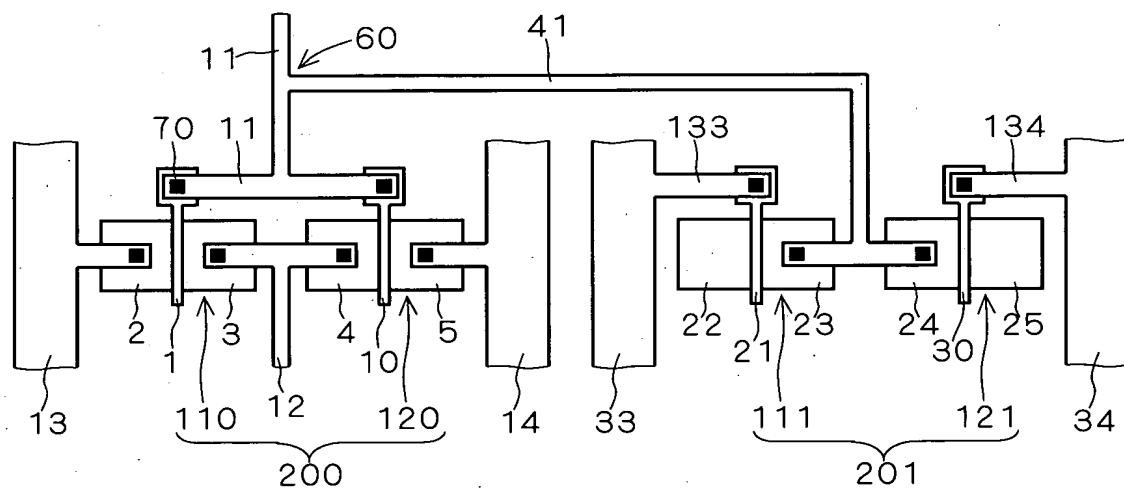


FIG. 8



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FIG. 9A

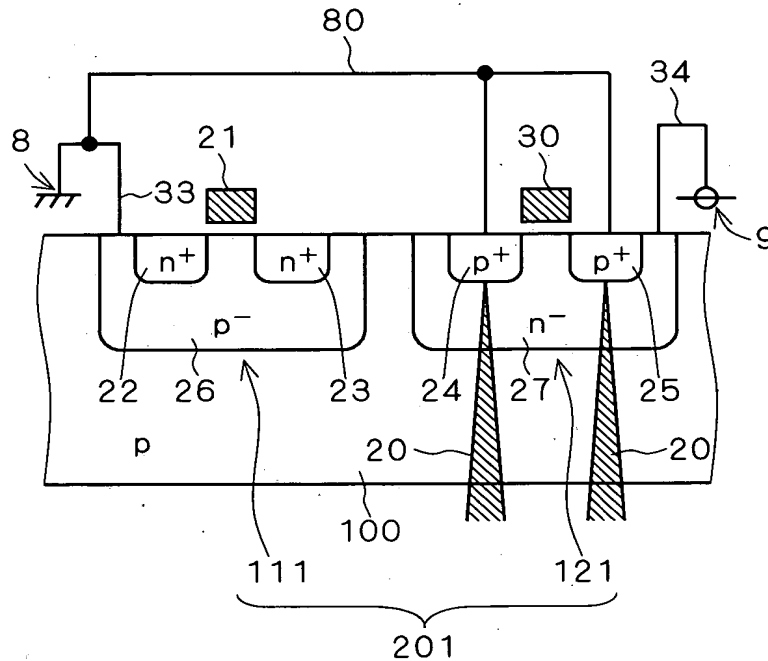
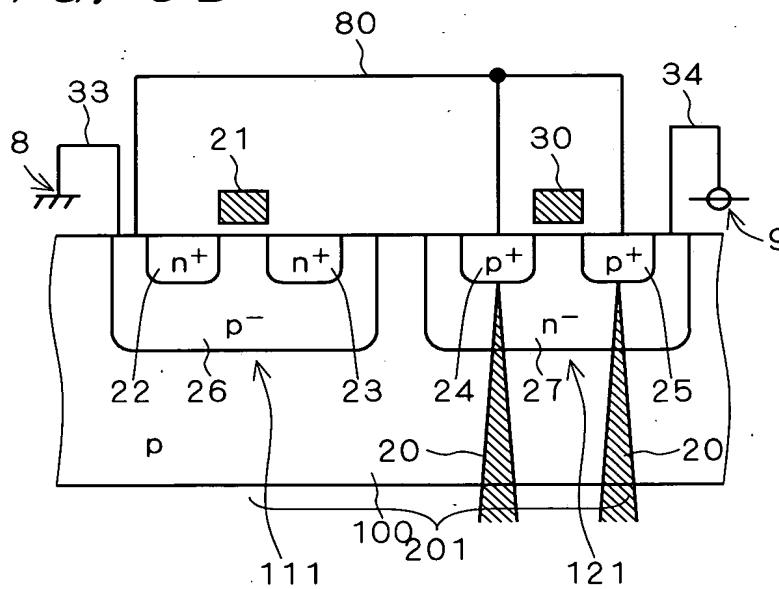
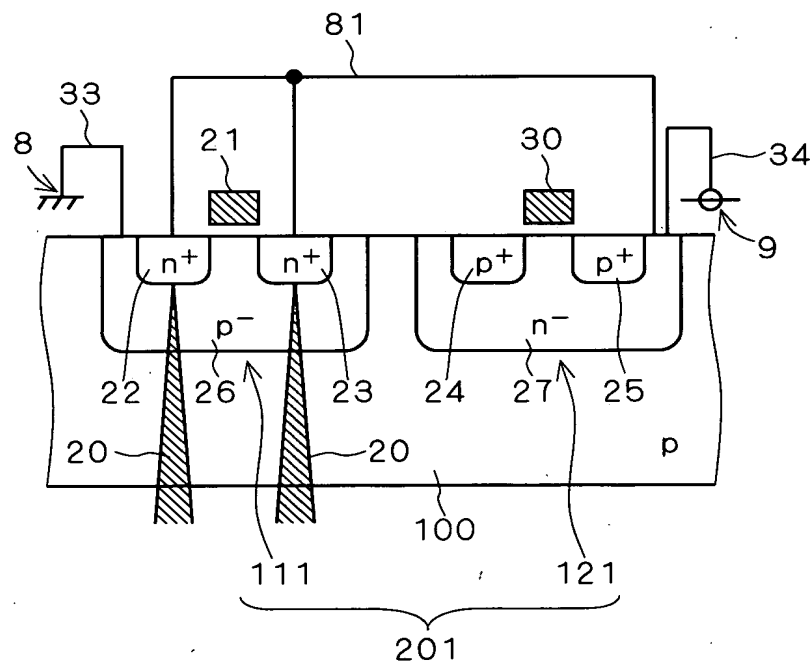


FIG. 9B



F / G. 10B



$$F/G. \quad 11$$
